International Journal of Textile and
Fashion Technology (IJTFT)
ISSN (P): 2250-2378; ISSN (E): 2319-4510
Vol. 8, Issue 6, Dec 2018, 1-10

TRANS STELLAR
•Journal Publications •Research Consultancy

THE LATHE AND HAND TOOLS USED IN TURN-WOOD LAC-WARE OF CHANNAPATNA FOR PRODUCT FORMS

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ABSTRACT

Channapatna is a small township tucked between two metropolitan towns of Mysore and Bengaluru of Karnataka, India. It is well known for the handicraft of turn-wood lacware. About two thousand artisans, earn their living by creating small wooden products like toys, home decorative and corporate gifts and so on. The craft is deemed as two-hundred years old and also has achieved its Geographical Indicator tag. The paper summarizes the turning techniques being used in the sector, the local names of the tools used in turning and the use of each of the tools. The focus of the paper is to document the manufacturing process and its tools to enable designers understand the feasibility of forms that can be achieved through wood turning in this sector. The methodology used was primarily observation and interviews of the local artisans and organisation working towards making turn-wood Lac-ware a lucrative business model.

KEYWORDS: Channapatna Turn-Wood Lacware, Hand Tools, Chisels and Gouges, Woodturning & Forms Out of Woodturning

Received: Sep 10, 2018**; Accepted:** Sep 30, 2018**; Published:** Oct 24, 2018**; Paper Id.:** IJTFTDEC20181

Original Article

INTRODUCTION

Channapatna is a township in the district of Ramnagaram, flanked by the two biggest metropolitan cities Bengaluru and Mysore of Karnataka, India. The township is located 37 miles south –west of Bangalore on the Bengaluru-Srirangapatna Highway road, at 12’38” North- latitude 77 degrees and longitude 13degrees east. The municipal corporation website of Channapatna gives the following details about the town. Its approximate population is 71912, stretched in an area of 12.87 KM or 53.587 hectares, which comprises of three hoblies or villages or gramapanchayat that are: Kasaba, Malur and Virupakshipura

It is known for its hand crafted wooden toys and also popularly known as “Gombegala Ooru” or Toys Town in vernacular lingo. The products are unique and exotic in their own way. They are tough and eco-friendly, painted in bright colours, with smooth, rounded edges, all of which make them safe and child-friendly. Not only they are popular with countries abroad, concerned citizens of India are also becoming aware of the need for safe and non-toxic products. The toys are made from local wood, painted with natural dyes and finally finished with a lacquer polish. The products range from toys like dolls, planes, trucks, telephones, complete kitchen sets, jigsaw puzzles and a host of other items. The other categories comprise of household items, napkin holders, car seat covers, Incense stick holders, candle stand and lot of costume jewellery items. (CMC, 2013) (William, 2011) and so on.

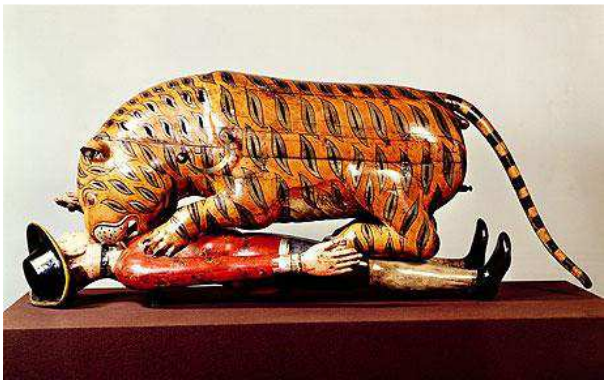

Figure 1: Tipus Tiger

As per Mysore Gazetteer by Lewis (Lewis, 1897), Ramanagaram and its surrounding was well known for a host of various kind of trees. Besides Sandal wood, the other tree which has prominence is Wrightia Tinctoria or Hale / Beppale. The tree gets importance because of its ivory colour, soft nature and light weight. Large scale settlement of artisans and the availability of raw materials, in and around the village make Channapatna ideal for the craft. The ruler, Tipu Sultan's penchant for wooden toy could be marked with Tipu's Tiger (figure 1).[1] A wooden technically innovative Tiger devouring a British soldiers made by the French designers, shows a genesis of toy culture to commemorate victory and festivals. The model is currently displayed at Victoria & Albert Museum. (Mueseum, 2018)

Figure 2: 29 Pieces of Navratri Toys

Besides being the hand crafted traditions, these toys are used during the Mysore Dusherra festival- a nine-event celebrated around October called the Navratri. A stage display is arranged at homes displaying toys - king, queen, scholars, musicians, ministers, villagers and cattle etc. (figure 2).[2] It is a method to make the next generation aware of the importance of their great cultural heritage, and religious. (Kamat, 2003). The craft has been registered through Geographical indication to give the artisans its due recognition. However, the main marketable products which are sold in domestic as well as range from jewellery, care-seat, home-wares, toys and many more.

MANUFACTURING AND PRODUCTS

The products are made out wood turning and colour applied through tinted lac along with polish with Palmyra leaves while turning the wood piece on the lathe.

[1]Tipus Tiger: https://www.vam.ac.uk/articles/tipus-tiger Accessed 26th August 2018
[2]29 pieces of Navratri toys https://www.karnataka.com/festivals/dasara-dolls-arrangement-ideas/Accessed 26th August 2018

The main ingredient of the handicraft is ivory wood also known as Wrightia Tinctoria in botanical terms. It is a small and deciduous tree which grows up to 10m with milky latex, scaly, smooth and ivory colour bark. It has leaves are about 8 -15 cm in size and lanceolate in shape. The tree also bears white flowers and long fruits in pods. It is widely distributed in India and Burma. The tree is usually found in deciduous forests, especially in Rajasthan, Madhya Pradesh and peninsular India (Shekhar, 2011). After procurement of the wood, the craftsmen season the wood for turnery process. The process of seasoning includes cutting wood into pieces of size 3 ¼ "to 4 ½ "and stacking over each other at odd rows to let every piece get complete exposure to natural air and light. The environment allows the wood to dry out as the excess moisture evaporates, which at late period could cause cracking in wood. The process allows the wood to retain the natural oils which makes it easy to be worked upon. The seasoning is of two types-Natural - by stacking them in the sun for months and artificially (using boric acid), for faster seasoning of the wood. In the summer months, seasoning takes about one to two months, whereas it takes about five to six months for the same during winters.

The second ingredient used is the lac. Lac is Nature's gift to mankind and the only known commercial resin of animal origin. It is the hardened resin secreted by tiny lac insects belonging to a bug family. With increasing universal environment awareness, the importance of lac has assumed special relevance in the present age, being an eco-friendly, biodegradable and self-sustaining natural material. The first scientific account of the lac insect was given by J. Kerr in 1782 which was published in Philosophical Transaction of Royal Society of London. (Singh, 2006). The lac is prepared in advance as per required colours and quantity.

The preparation of lac begins with heating and softening of the raw pieces. The lac is stuck on to the ends of two identical wooden sticks which are heated until the lac becomes plastic and malleable. A small portion of powdered dye is mixed with a bit of water and this is added to the warm plain lac. The mixture is then beaten by shifting it from one wood to another by hand, until the correct shade evolves. If lac then begins to assume the consistency of rubber until the lac and the colour are homogenously mixed. A long thin stick of coloured lacquer is shaped like colour crayons of size10 to 15 cm lengths. These sticks have a shelf life of only one month before they become hard and unfit for lacquering. The dyes used are sometimes acrylic in nature, but the export market prefers natural dyes.

The Natural Dyes

The colours used in making last sticks are of food grade quality. Two or more colours are mixed to get a third colour. The main colours are from (figure 3)[3]

Figure 3: Colour Lac Sticks

- Yellow: (Turmeric powder) -Turmeric powder is widely used in Indian cooking and is well known for its

medicinal and herbal properties.

- **Bluish Black / Bluish Green:** (Indigo powder): Indigo is a deciduous shrub. The whole plant is used for extraction of dye especially for denims and fabrics
- **Orange:** (Kanchi KumKum powder+ turmeric) -Natural kumkum powder, considered sacred in India, it is dried and powdered with a lime/lemon and roots giving the rich red.
- **Dark Brown:** (Ratanjyot) This dye is made from the bark of a Ratanjyoth tree (Jatropha)
- **Red:** Manjishta (Natural Alizarin) + Kanchi KumKum - Manjishta, also known as Indian Madder, is a creeper that is cultivated in the foot hills of the Himalayas in huge quantities.
- **Light Brown:** Catechu (Katha) - Catechu is purified extract of wood Acacia's catechu.

Polishing

After the product being coloured while turning, the glossy finish is done by the leaf of a Screw Pine tree or locally called as "Kewra". They are palm-like, deciduous trees and shrubs native to the old world tropics and subtropics. They are classified in the order Pandanales family Pandanaceae. Screw-pine leaf is long, thin, narrow, and green. It is sold fresh, frozen, or dried. The leaves and flowers also come as bright green extracts. The dried leaves are less fragrant than the fresh leaves. (Vaughan, 1953). Craftsmen collect the Pandanae leaves from plants in the wild. Only the young leaves are cut so the plant will naturally regenerate. The young leaves are sliced in fine strips and sorted for further processing. The dried leaf is later used to polish the lac wooden surface to give a shine.

Tools and Machinery

The most important tool for lac-turnery is the lathe. Traditionally, all lacquer ware was produced using simple hand lathes called Patrisor bow lathe, made by local carpenters(figure 4)[4]. A bow string is used to turn a rotating axle in the center of wooden lathe. The turning tool is held in the free hand and pressure is added with the foot, shaping the spinning wood. As a hand powered tool it can be used without electricity in village households.

Figure 4: Bow Lathe

[3]Colour Lac Sticks: Photograph by researcher
[4]Bow Lathe or Ptri: Photograph by researcher ,

With the increasing market for lac-ware the electric power lathe has been introduced.(figure 5)[5] A power lathe has a head stock that consists of a revolving axle attached to two belt pulleys. The belt runs over a pulley mounted on a revolving shaft that is driven by an electric motor. The production time decreases considerably on the power lathe as both hands are free to operate turning tools. Power lathes are more often located in small factory settings, where there is electricity.

Figure 5: Automated or Power Lathe

MANUFACTURING PROCESS

A wood turning lathe is the main machine which rotates the work piece on its axis. This allows the artisans to perform various operations such as cutting, sanding, knurling, drilling, or deformation with tools to be applied to the wood and create an object which has symmetry about an axis of rotation. The steps of turning are as follows:

- The seasoned wood is mounted in the lathe by hammering one end lightly inside the grove to hold a better grip. The part fixed to the chuck of the machine becomes wastage.
- The wood is turned on an axis of the metal shaft, which is rotated by a belted motor run by electricity.
- The skilled artisans hold tools at different angles to give form to the wood. The shapes are determined by the type of tool and the pressure applied on it to make the form. Sharper tools are used to create cleaner edges, flatter tool for broader edges.
- The product is usually made in smaller pieces. Each of the pieces is made by one artisan such that the efficiency remains high. In case, there is just one artisan working to achieve a product alone, he first completes the similar pieces to ensure more productivity.
- Once the form is ready, the product gets its colour. At this stage the article is ready to be lacquered. The quality of the final product depends on the skill with which lacquer is applied to the turning wood. A lac stick of the chosen colour is pressed to the revolving wood. The friction causes the lac to melt and spread uniformly over the area on which it is applied.
- Final finishing is done using a screw pine leaf to help spread the lac on the turning wood and polish the object. Buffing lends a translucency to the finished product. The lacquered article is separated with a cutting tool and removed from the lathe

[5]Automated or Power Lathe: Photograph by researcher

- Once the pieces are removed, they are left to dry as they have been under friction. The piece is decorated using a brush and paint for further ornamentation if required.
- Finally, all the pieces are arranged and put together to complete it as one product.
- The product is cleaned and packed according to specification.

Tools and Their Functions

Forms are created by the artisans of wood through the technique of removal of material, in this case wood. The form may usually consist of more than one part and they are assembled together using a ta small piece of narrow wooden dowel. The pieces of a complete form are completed while turning - shaping the wood, colouring the wood and polishing the coloured wood for a shine. Once the pieces are dismounted from the lathe, it is assembled to give the final shape.

The wood is removed from the turning mass through various tools. The removal is done through a hand-tool, which consists of a blade and wooden handle (Figure 6)[6] that is touched with optimum pressure on the rotating piece, held by a jig called *Chandrikay* or the chuck.

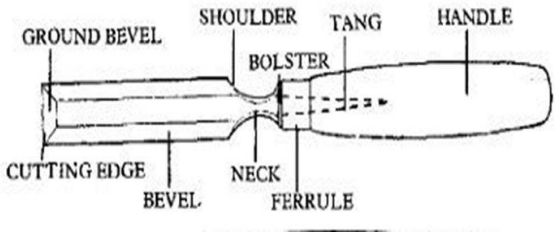

Figure 6: Parts of a Hand Tool

A tool may be divided into two parts the blade and the handle. The blade suggests the activity that the tool is required to perform. The handle is usually made of wood by turning and the tools are made by local bladed are wrought by a local blacksmith, who joins the blade to the handle. The blade edge may be flat or bevelled according to the filing done on a grinding stone which is attached to sharpen the tools at interims.

The shoulder and the neck are used is the line above which the artisans keep his index finger or thumb for applying pressure on the tool for deeper access for material removal. The tools are universally designed for a right handed as well as left handed artisan, but the lathe mounted allow only right handed artisans to work with proficiency. The tang is the lower part of the blade that is pushed into the wood to have a tight grip and closed by a bolster to prevent movement of the tang. The size of the tool blade is dependent on the size of the product.

The forms achieved while turning are primarily beading, coves, V-cuts, straights, hollows, shoulder, ball, concave surface, squares for bases. (Figure 7).[7] Each of the shapes is done through a particular tool – chisels, gouges and parting.

[6]Parts of a Tool: Autopedia, the practical resource for sustainable living – crafts & technology- chisels &gouges Accessed 26th August 2018

[7]Fine Wood working, Turning Bowls with Richard Raftan, (2002) Chapter 6, page 101, Tauntan Press USA

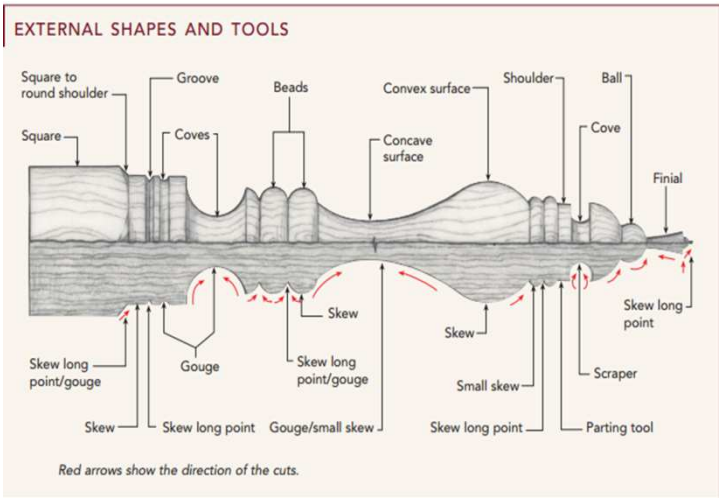

Figure 6: Turning Forms

Tools & Their Use

The below table charts out the activity of tools with their local names that are done on the field. All images used in the table are clicked by the researcher.

Table 1: **Tool Vs Use**

Sl. No.	Images	Use
1.		**Baachi** To cut the wood from the edge to fit inside the chuck and hammer to push the wood inside
2.		**Bairgay** A parting tool Helps in making a mark or core the wood, for parting the wood or marking, hollow depth to remove material
3.		**Side Uli** Give straight shapes from side and hollow created in the centre

Table 1: Contd.,		
4.		Kuivyoli A Spear point chisel Onvoli A slanted blade chisel A Parting chisel for scoring, marking gives angular shapes and used in scoring or V groove.
5.		Ugravoli Gouge chisel Used in round shaped and beads, coves and so on.
6.		Matvoli Straight chisel Trim the corners of the wooden piece and for boring.
7		**Toduli** Round head chisel To remove material from the inside of rounded objects like pots or round vases
8.		**Borer** Screw Driver shaped tool used to drive holes or mark surfaces

Special Purpose Tools

The tools mentioned above are meant for different activities as suggested in the activity column of the figure. Apart from these tools there are some special tools that the artisans create for themselves according to the form required. These allow them to work on complicated areas. Two of them are mentioned in the Table 2 below.

Table 2

Sl. No	Activity	Tools
1.		
2.		

The tools made in the field by local blacksmiths. The blade sizes determine the sizes of the tool. The tools are manoeuvred using pressure and direction to achieve.

CONCLUSIONS

This paper is a part of a bigger research which intends to understand the feasibility of the form innovation possible in the cluster of turn-wood lac ware of Channapatna. The data was collected and documented through secondary and primary observations, interview and self-practice of researcher to understand wood turning techniques.

The products made in the cluster are turned on the single axis lathe machine, which renders the symmetrical form to the product. A designer needs to plan the profile of the product along with dimension and colour for the intended and create a drawing of profile with dimensions of turning. The variety of designs can range from the functionality of the product, the inspirations used and limitation of the tool and material used.

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